

Amendment
US Appl. No. **10/599,815**
Attorney Docket No. **PSA0450699**

AMENDMENTS TO THE DRAWINGS

Please replace original international application drawings with the copies of the original international application drawings which are attached to this paper. The replacement drawings do not add any new matter.

REMARKS

As a preliminary, Applicant and Applicant's representative thank the Examiner for the interview of March 2, 2009.

By the present amendment, the specification has been amended to introduce section headings and to correct an immediate error, and replacement formal computer-prepared drawings with labelled boxes in Fig. 2 are submitted.

Further, as discussed at the interview, claim 1 has been amended

- to clarify the **at least two** standard downshift laws ($C_{(n)(n-1)}$, $C_{(n+1)(n)}$) between a gear $n+1$ and a gear n , and between a gear n and a gear $n-1$, respectively, as a function of the speed at the wheel (V) and acceleration pedal depression (E),

- to recite that the recited steps are performed **when the driver begins to brake** when the vehicle is in gear $n+1$,

- to identify as ($\Delta_{(n)(n-1)}$, $\Delta_{(n+1)(n)}$) the respective gaps calculated in the step of defining the new downshift laws,

- to recite a step of **downshifting the transmission** by at least one transmission ratio if the calculated gaps ($\Delta_{(n)(n-1)}$, $\Delta_{(n+1)(n)}$) are such that the operating point of the vehicle (V , E) defined by the speed at the wheel (V) and acceleration pedal depression (E) when the driver begins to brake becomes lower than at least one ($C_{(n+1)(n)} + \Delta_{(n+1)(n)}$) of the new downshift law,

- to recite that the transmission is **downshifted directly by more than one transmission ratios** if the calculated gaps ($\Delta_{(n)(n-1)}$, $\Delta_{(n+1)(n)}$) are such that the operating point of the vehicle (V ,

E) when the driver begins to brake becomes lower than more than one of the new downshift laws.

Support for the added recitations is found in the original application, for example, from page 8, line 20 to page 9, line 10 and Fig. 4 (driver begins to brake, downshift by more than one transmission ratio).

Claim 2 has been amended to replace “characterized in that” by “wherein” and to correct “converting... at” by “converting... to” in step (c).

Claims 3 and 4 have been amended to replace “characterized in that it comprises a method for controlling” by “which controls” and “according to claim 1” by “according to the method of claim 1.”

New claims 5-11 have been added. Support for the added recitations is found in the original application, for example, steps (a)-(c) of claim 2 (claims 5-8), step (d) of claim 2 (claims 9-10) and step (e) of claim 2 (claim 11).

Claims 1-11 are pending in the present application. Claim 1 is the only independent claim.

I. Objection to the drawings

In the Office Action, the drawings are objected to as showing insufficient line quality and unlabeled.

Formal computer-prepared drawings are submitted with this paper, in which boxes 1, 2, 3, and 4 of Fig. 2 have been labelled as follows:

1: gearbox input shaft target speed calculation block (cf. specification page 6, lines 5-7)

- 2: transmission ratio-dependent gain block (cf. specification page 7, lines 5-6)
- 3: gearbox input shaft average target speed determination block (cf. specification page 7, lines 15-17)
- 4: gearbox input shaft target speed - vehicle speed average target speed conversion block (cf. specification page 7, lines 19-22)
- 5: standard mapping block (cf. specification at page 8, line 6)
- 6: recalculated mapping block (cf. specification at page 8, line 6)

The replacement drawings do not add any new matter.

In view of the above, it is submitted that the objection should be withdrawn.

II. Objection to the specification

In the Office Action, the specification is objected to as not including section headings.

The specification has been amended to introduce section headings. Accordingly, it is submitted that the objection should be withdrawn.

III. Subject matter rejection

In the Office Action, claims 1-4 are rejected under 35 U.S.C. 101 as directed to non-statutory subject matter.

Claim 1 has been rewritten with separate paragraphs reciting active defining and downshifting steps. It is submitted that at least downshift of the transmission transforms an article or physical object (namely, the gear chain) to a “different state or thing.”

In view of the above, it is submitted that the rejection should be withdrawn.

IV. Art rejection

In the Office Action, claims 1 and 3 are rejected under 35 U.S.C. 102(b) as anticipated by US 5,527,235 to Kuroda et al. (“Kuroda”).

Reconsideration and withdrawal of the rejection is respectfully requested. Kuroda provides a standard downshift map providing engine brake (Fig. 4) when the ABS system is not in operation, and a special downshift map without engine brake (Fig. 3) when the ABS system is in operation. The objective of Kuroda is to avoid disturbances of the ABS system by unpredictable engine brake when the ABS system is on.

Thus, Kuroda changes the downshift laws according to whether the ABS system is in operation or not, but Kuroda does not recalculate new downshift laws to control downshifting at a time when the driver steps on the brake.

In addition, Kuroda does not allow direct downshift of more than one transmission ratio. In other words, in Kuroda, each gear is changed individually when the vehicle’s operating point crosses a downshift law in the standard (Fig. 4) or special (Fig. 3) downshift map.

In contrast, in the present invention as recited in present claim 1, **when the driver begins to brake**, the method **defines a group of new downshift laws** which are shifted by a calculated gap from the standard downshift laws, and **downshifts the transmission directly by more than one transmission ratios** if the calculated gaps are such that the operating point of the vehicle when the driver begins to brake becomes lower than more than one of the new downshift laws, as recited in present claim 1.

An advantage of this feature is that improved engine brake can be provided without detrimental delays which are likely to occur with gear-by-gear downshift, as explained in the present specification, for example, at page 3. Another advantage is that the direct downshift of several gears can occur without a detrimental delay, since the number of downshift gears is apparent from the recalculated downshift laws when the driver steps on the brake. This enables the driver to use the brake pedal as a trigger for downshifting, and in particular, for directly downshifting several gears.

This feature of present claim 1 and its advantages are not taught or suggested in Kuroda. Therefore, present claim 1 and the claims dependent directly or indirectly thereon are not anticipated by, and not obvious over, Kuroda.

Further, regarding the dependent claims, Kuroda fails to teach or suggest the combined features of each of these respective claims. Therefore, each of the dependent claims is not anticipated by, and not obvious over, Kuroda.

In view of the above, it is submitted that the rejections should be withdrawn.

Conclusion

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

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In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 502759.

Respectfully submitted,

/nicolas seckel/

Nicolas E. Seckel
Attorney for Applicants
Registration No. 44,373

Nicolas E. Seckel
Patent Attorney
1250 Connecticut Avenue NW Suite 700
Washington, DC 20036
Tel: (202) 669-5169
Fax: (202) 822-1257
Customer No.: 29980
NES/rep